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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/645,909 | 08/22/2003 | Chikara Yamamoto | KAW-304-USAP | 8553 |
| 28892 | 7590 | 07/28/2005 | EXAMINER | |
| SNIDER & ASSOCIATES P. O. BOX 27613 WASHINGTON, DC 20038-7613 | | | SEVER, ANDREW T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2851 | |

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/645,909 | Applicant(s) YAMAMOTO, CHIKARA | |
| | Examiner Andrew T. Sever | Art Unit 2851 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by O'Connor et al. (US 6,672,722.)

O'Connor teaches in figure 1 a projector optical system comprising:

A digital micromirror device (SLM which is taught in column 1 lines 22-26 can comprise of a digital micromirror device (DMD)) for modulating illumination light, the digital micromirror device including minute mirror elements with variable light-reflecting directions, the minute mirror elements being arranged regularly within a plane so as to correspond to respective pixels of an image, each minute mirror element switching, according to a video signal fed therein, between two states having respective angles of rotation different from each other so as to selectively reflect the illumination light into one of first and second directions (this is the inherent method by which a DMD operates, see of example US 5,061,049 to Hornbeck, US 5,535,047 to Hornbeck, US 2003/0016335 to Penn, US 6,582,080 to Gibbon et al.);

An illumination optical system (comprising of at least the light source and plate polarizer) for outputting a luminous flux having a uniform polarization direction incident on a polarization-separating surface of a polarization separating means (102 and 103 are luminous flux separation means...plate polarizer polarizes the light and the polarized light is directed to polarization beam splitters);

A projection optical system for projecting onto a predetermined projection surface illumination light modulated by the digital micromirror device (not shown in figure 1 but inherent in a projection display device (see column 1 lines 6-9)); and emitted in the first direction; and

Wherein the polarization separating means (102 and 103) for making light from the illumination optical system incident on the digital micromirror device and guides to the projection optical system the illumination light modulated by the digital micromirror device and emitted in the first direction;

Wherein the polarization separating means has a polarization-separating surface for separating a luminous flux incident on the digital micromirror device and modulated luminous flux emitted from the digital micromirror device from each other (103 and 102 are polarization beam splitters);

Wherein an angle between the light which is incident on the digital micromirror device from the illumination optical system and the illumination light modulated by the digital micromirror device and emitted in the first direction is set according to an F number of the illumination optical system (It is inherent that a O'Connor would make the DMD to emit light in the first direction according to

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an F number of the illumination optical system; see for example US 2002/0033903 to Sato which teaches in paragraphs 12-14 that the incidence angle on a light modulator is set or at least limited by an F number of the illumination optical system); and

Wherein a polarization direction rotating means (1/4 wave plate) for rotating a polarization direction is disposed between the polarization separating surface and the digital micromirror device.

With regards to applicant's claim 2:

The luminous flux separating means is a prism member.

With regards to applicant's claim 3:

The rotating means is a quarter-wave plate.

With regards to applicant's claim 5:

See cube 103 and the red color path: S-polarized light is reflected towards the DMD upon modulation and reflection the image light now P-polarized light is transmitted through the polarization separating surface towards the projection optical system (which would inherently be after the G/M filter after cube 104.)

With regards to applicant's claim 6:

The system is for a projector.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al. (US 6,672,722) as applied to claim 1-3, 5, and 6 above, and further in view of Cannon et al. (US 6,726,332.)

As described in more detail above, O'Connor teaches a projector optical system.

O'Connor does not specifically teach the projection optical system for projecting the luminous flux or what form it takes. Cannon et al. in column 4 lines 1-9 teaches that in projection optical systems for DMD based system such as O'Connor's; a telecentric projection optical system is typically used. Given the teaching of Cannon that it is typical to use telecentric projection optical systems due to the performance characteristic of DMD's, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a telecentric projection optical system in the projector optical system taught by O'Connor et al.

Response to Arguments

5. Applicant's arguments filed 5/9/2005 have been fully considered but they are not persuasive.

Applicant argues the amendment of adding that the angle between the light, which is incident on the digital micromirror device from the illumination optical system and the illumination light modulated by the digital micromirror device and emitted in the first direction is set according to an F-number of the illumination optical system reads over the O'Connor reference. Applicant specifically cites paragraph 39 of applicant's specification for support. Relying on the cited paragraph it is revealed that applicant's claim is directed to optimization of the projection system. Since F-number is a well known parameter of projection systems and as is now been demonstrated by the Sato reference it is inherent that O'Connor would have used an optimized angle that is determined by the F-number of the illumination optical system as said F-number inherently restrains the range of the angles that can be used without resulting in poor image quality. Further it should be noted that the new limitation claims the process by which the apparatus is made/designed. However as stated in MPEP 2112.01 "When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent." All see *In re Ludtke*, 169 USPQ 563 (CCPA 1971), wherein the court upheld a rejection as the applicant had failed to show that the cited reference did not possess the functional characteristics of the claims. In applicant's arguments, applicant has only alleged what angle O'Connor was physically

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set at, applicant does not show any evidence that this angle was not set due to the F number of the illumination optical system. Unless applicant provides evidence to the contrary, since O'Connor teaches the claimed structural components the office is forced to presume that the limitation that the angle is set according to an F-number, is inherent. Accordingly applicant's arguments are found non-persuasive and the rejection has been made final.

Further the Sato reference has been added to show that a characteristic not disclosed in the reference (O'Connor) is inherent (specifically that the setting of the angles with regards to the illumination optical y system and the modulator is done according to an F-number of the illumination optical system.) See *Continental Can Co. USA v. Monsanto Co.* 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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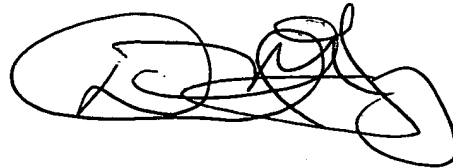
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS

A handwritten signature in black ink, appearing to read 'David Gray', with a large, loopy flourish at the end.

David Gray
Primary Examiner